

cursory comparison with the maximum year's observations, as recorded by Hofrath Schwabe, that the magnitude of the different groups, as well as the average amount of spotted surface during any period of the year, is unprecedented. Since accurate measurements on the area covered by the spots are wanting for any time previous to the Kew Cycle, it is, of course, impossible to speak on this point with absolute certainty.

The latter half of the year shows an increase of no less than thirty-five groups as against the first half; it seems, consequently, not at all certain that the real maximum has been reached or passed.

A very remarkable feature of the groups observed during the year appears to be their extraordinary lifetime. Although the calculation of the heliographic positions is not yet completed, and therefore the most reliable basis for judging on the identity of groups on their return to the visible surface is still wanting, yet there can be no doubt from the observations, that an exceedingly large number of groups completed 3, 4, and even more revolutions, before finally collapsing. Whether this peculiarity in the behaviour of groups belongs to all maximum years,—whether the groups of minimum years are on the whole of a more ephemeral existence,—and further, in what manner the duration of any single group is connected with, or dependent on, its magnitude and the law of periodicity, are questions very forcibly suggested by the observations of the past year.

January 6th, 1871.

Further Notes on the Floor of Plato. By W. R. Birt, Esq.

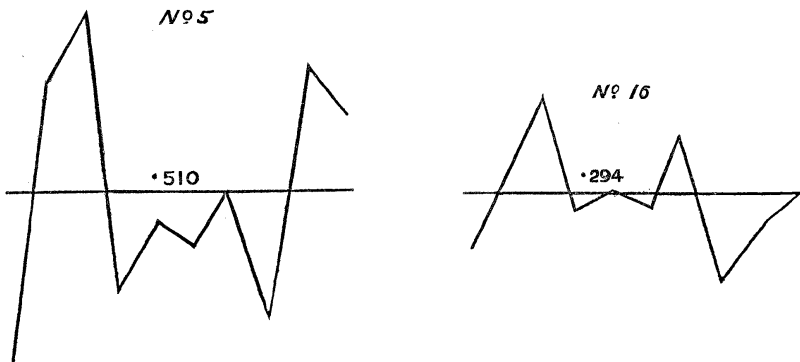
I have the honour to submit to the notice of the Society some further observations of the spots on the floor of *Plato*. In the *Monthly Notices* for April, 1870, vol. xxx., p. 160, will be found the normal degrees of visibility of the spots for twelve lunations ending March, 1870. The observations have been continued with the same care during the succeeding eight lunations, and now number 1594. The normal degrees of visibility have been determined for eighteen lunations; they are given in the following table :—

No.	Obs.	Vis.	No.	Obs.	Vis.
0	9	·046	9	43	·222
1	194	1·000	10	12	·062
2	9	·046	11	28	·144
3	174	·897	12	6	·031
4	173	·892	13	31	·160
5	99	·510	14	84	·433
6	43	·222	15	3	·015
7	22	·113	16	57	·294
8	3	·015	17	161	·830

No.	Obs.	Vis.	No.	Obs.	Vis.
18	14	·072	28	1	·005
19	29	·150	29	7	·036
20	9	·046	30	27	·139
21	5	·026	31	6	·031
22	34	·175	32	13	·067
23	9	·046	33	2	·010
24	11	·057	34	5	·026
25	28	·144	35	1	·005
26	1	·005	36	1	·005
27	2	·010			

In order to ascertain if the spots on the surface of *Plato* have been *equally* affected, which they should be upon the assumption of extraneous circumstances only producing changes in their appearance, such as solar illumination, alteration of position on the Moon's disk by libration and variations in the translucency and density of the Earth's atmosphere, the degrees of visibility for each pair of lunations between April 1869, and November, 1870, have been projected in curves. It is to the characters of these curves that I desire to solicit attention.

The general want of agreement which is found amongst the curves is at once conclusive that *all* the variations in visibility are not dependent upon the agencies above mentioned. On the other hand, the agreement subsisting between the curves of a few neighbouring spots points to some local agency, although in two instances spots at some distance from each other have manifested very similar phenomena, except in range; for example, spots No. 5

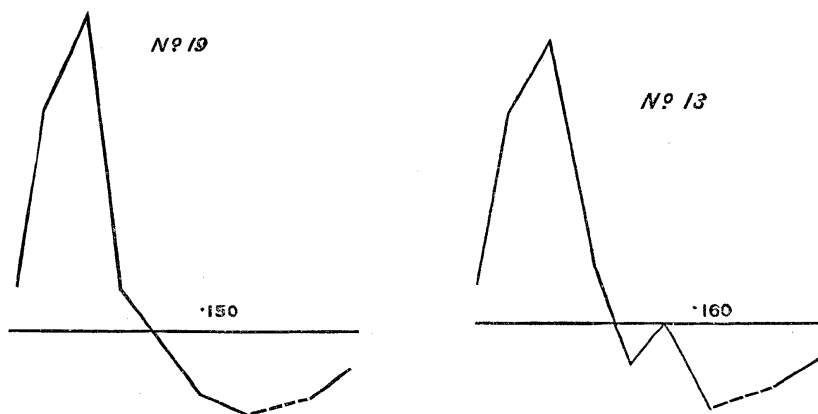


and 16; one not far from the south border, the other near the north border, have increased and decreased simultaneously during the eighteen lunations.

The curves are separable into three groups; the first distinguished by bold acuminated maxima, indicating a rapid increase of visibility and as rapid a decline, not unlike the maxima of some well-known variable stars which for a short time only are within the range of telescopic vision. Six spots, Nos. 19, 13, 22, 14, 5, and 16, on the western part of the floor, exhibited this rapid

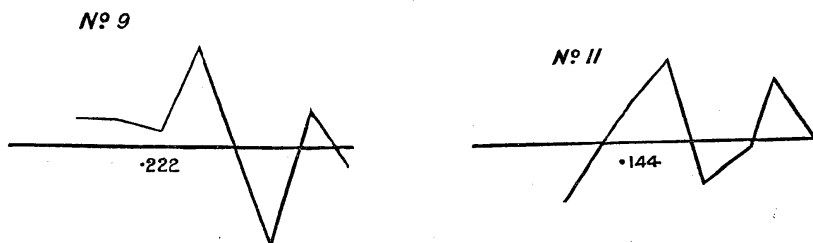
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increase of visibility during August and September, 1869, in which spot No. 7 near the east border participated. The curves



of Nos. 5, 16, 19, and 13 are given as specimens of those of the group.

The portion of the floor which may be regarded as the site of the second group is a band stretching from west to east on the southern half of *Plato*. Five spots, Nos. 9, 11, 18, 17, and 10 on



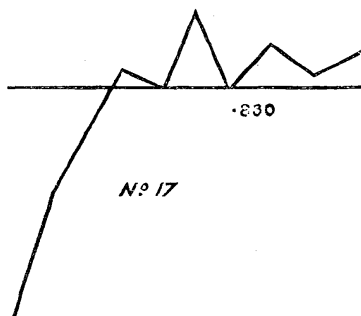
this band, with No. 29 near the north border, increased in visibility during February and March, 1870; the rise and fall being much less rapid than in August and September, 1869. The curves of Nos. 9 and 11 are given as specimens of this group.

In August and September, 1870, spots Nos. 18, 11, and 9, with the south-western spots 22, 14, and 5, and the eastern spots 6 and 7, increased in visibility, but not to the extent, except in No. 5, which characterised the increase at either of the previous epochs. These spots form the third group.

The above are not the only phenomena presented by the spots. In some cases we have nearly opposite curves, indicating opposite affections; for example, the curve of spot No. 19 on the north-west part of *Plato* is opposite in character to that of No. 17 on the south end. This is clearly apparent on comparing the curves. There appears also to be a general absence of agreement between the curves of those spots, as No. 17, which are known to be craterlets, as if the small white round spots differ from them specifically, or are affected by agencies that act more regularly. It is

to be remarked that the craterlets possess *high* degrees of visibility, *i.e.* they are much more frequently seen than the spots properly so called, which are mostly characterized by *low* degrees of visibility.

While these results appear to point to the operation of agencies the nature of which we are at present unacquainted with, they indicate the importance of continuing the observations, at least during another period of twenty lunations. It has already been



found that curves which in the earlier observations agreed in presenting similar maxima departed from a typical form in the latter, showing that the same spots were not under the same influences at the two periods.

It is not impossible that the prominent features of the curves may be explained upon the hypothesis of a present lunar activity. It is, however, desirable that observations should be multiplied, especially as there are strong objections to such a view, although the idea has been mooted during the last eighty years.

Solar Eclipse, June 22, 1870. By John Tebbutt, Jun., Esq.

The solar eclipse of last month was observed by me with the four-feet refractor and a power of about 30, as follows:—

				Windsor M.T.			
				d	h	m	s
Beginning	..		June 23	20	14	30	
End		21	16	20	

The Sun's limb boiled considerably, but both contacts, especially the last, were pretty well observed. Sun-spots were remarkably numerous.

Windsor, New South Wales,
1870, July 11th.